DIRECT ANTIFREEZE COOLED FUEL CELL POWER PLANT WITH PASSIVE WATER MANAGEMENT

Abstract of the Disclosure

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The plant (60) includes at least one fuel cell (10, 62) having a wetproofed anode support (20) and a cathode support (24) for directing reactant streams adjacent 10 catalysts (14, 16). A porous anode cooler plate (26) has its fuel channels (28A, 28B, 28C, 28D) secured adjacent support (20). A porous cathode water management plate (38) has its oxidant channels (40A, 40B, 40C, 40D) secured adjacent the cathode support (24). direct antifreeze solution passes only through coolant 15 channels (32A, 32B, 32C, 32D) of the anode cooler plate (26) so the solution cannot poison the catalysts (14, while 16), fuel cell product water flows passively (38) through the water management plate and water 20 management channels (44A, 44B, 44C, 44D) defined in the plate (38) to humidify reactant streams and be discharged from the fuel cell (62).